# Test Before You Treat

*CCR researcher Frank Gonzalez, Ph.D., is recognized for the development of a life-saving diagnostic test to identify cancer patients that may experience 5-fluorouracil toxicity.*

Frank Gonzalez, Ph.D., Chief of CCR's Laboratory of Metabolism, and his former fellow Pedro Fernandez-Salguero, Ph.D., now a professor in Spain, received the 2011 Federal Laboratory Consortium National Award for Excellence in Technology Transfer for developing and transferring a life-saving diagnostic test to the marketplace. The test has been nonexclusively licensed to several companies in Europe and the United States. Before administering the drug 5-fluorouracil (5-FU), it is now possible to screen patients for a mutation that puts them at risk for life-threatening toxicity.

Gonzalez and Fernandez-Salguero determined the molecular basis for 5-FU-linked toxicity. They discovered a splicing mutation in the dihydropyrimidine dehydrogenase (DPD) gene, which is normally involved in the degradation of the drug. Patients' sensitivity to 5-FU is directly correlated with a mutated DPD gene and low DPD activity levels, resulting in the accumulation of 5-FU in the body.

In the United States, approximately 275,000 cancer patients receive this drug annually. The transfer of this technology through nonexclusive licenses has enabled the wide dissemination of the diagnostic test. "As a result of these multiple licenses," noted Gonzalez, "many patients around the world can avoid being treated by a drug that may prove to do them more harm than good."

*To learn more about Dr. Gonzalez's research, please visit his CCR Web site at http://ccr.cancer.gov/staff/staff.asp?Name=gonzalez.*